

AUTHOR INDEX

- Albrecht, W. A.** Calcium saturation and anaerobic bacteria as possible factors in gleization, 213-217; soil organic matter and ion availability for plants, 487-494.
- Alderfer, R. B.,** and Merkle, F. G. Measurement of structural stability and permeability and influence of soil treatments upon these properties, 201-212.
- Allison, F. E.** See **Pinck, L. A.,** Sherman, M. S., and.
- Allyn, R. B.,** and Work, R. A. Availameter and its use in soil moisture control: I, 307-321; II, 391-406.
- Anderson, A. B. C.** See **Edlefsen, N. E.**
- Arnon, D. I.** See **Hoagland, D. R.**
- Ayres, A. S.** Sorption of potassium and ammonium by soils as influenced by concentration and degree of base saturation, 265-272.
- Black, I. A.** Methods for determining phosphate in soil extracts, 289-298, colorimetric determination of traces of cobalt, 387-390.
- Bracken, A. F.,** and Greaves, J. E. Losses of nitrogen and organic matter from dry-farm soils, 1-15.
- Browning, G. M.,** and Milam, F. M. Comparison of Briggs-McLane and Goldbeck-Jackson centrifuge methods for determining moisture equivalent of soils, 273-278.
- Bushnell, J.** Phosphorus content of sandy loam containing sufficient available phosphorus for vegetable crops, 153-158.
- Dhawan, C. L.** See **Hoon, R. C.,** and Madan, M. L.
- Dore, W. H.** See **Kelley, W. P.,** and Page, J. B.
- Dyer, W. J.** See **Wrenshall, C. L.**
- Dyer, W. J.,** and Wrenshall, C. L. Organic phosphorus in soils: I, 159-170; III, 323-329.
- Edlefsen, N. E.,** and Anderson, A. B. C. The four-electrode resistance method for measuring soil-moisture content under field conditions, 367-376.
- Ensminger, L. E.,** and Gieseking, J. E. Absorption of proteins by montmorillonitic clays and its effect on base-exchange capacity, 125-132.
- Gieseking, J. E.** See **Ensminger, L. E.**
- Gilbert, S. G.,** and Shive, J. W. Direct-reading flowmeter and its use in respiration studies with plants, 55-58.
- Gillam, W. S.** See **Tedrow, J. C. F.**
- Graham, E. R.** Calcium transfer from mineral to plant through colloidal clay, 65-71.
- Greaves, J. E.** See **Bracken, A. F.;** **Hervey, R. J.;** **Holt, W. L.**
- Hass, A. R. C.** The pH of soils at low moisture content, 17-39.
- Henderson, W. J.,** and Jones, U. S. Use of radioactive elements for soil and fertilizer studies, 283-288.
- Hervey, R. J.,** and Greaves, J. E. Nitrogen fixation by *Azotobacter chroococcum* in the presence of soil protozoa, 85-100.
- Hoagland, D. R.,** and Arnon, D. I. Physiological aspects of availability of nutrients for plant growth, 431-444.
- Holt, W. L.,** and Greaves, J. E. Occurrence of selenium in Utah forage plants, 299-306.
- Hoon, R. C.,** Dhawan, C. L., and Madan, M. L. Effect of certain soil factors on yield of wheat in Punjab, 339-349.
- Ignatieff, V.** Ferrous iron in soils, 249-263.
- Jones, U. S.** See **Henderson, W. J.**
- Karraker, P. E.** See **Weeks, M. E.**
- Katznelson, H.,** and Wilson, J. K. Occurrence of *Rhizobium meliloti* bacteriophage in soils, 59-63.
- Kelley, W. P.,** Dore, W. H., and Page, J. B. Colloidal constituents of American alkali soils, 101-124.
- Kong, R. W.** See **Moore, R. E.**
- McCalla, T. M.** See **Myers, H. E.**
- MacIntire, W. H.,** Shaw, W. M., and Robinson, B. Influence of limestone and dolomite upon sulfate retention from annual additions of potassium sulfate, 73-84.

- Madan, M. L. *See* Hoon, R. C., Dhawan, C. L., and.
- Magistad, O. C. Ion and plant relationships in western arid soils, 461-471.
- Marsh, R. P., and Shive, J. W. Boron as a factor in calcium metabolism of corn plant, 141-151.
- Mattson, S. Laws of soil colloidal behavior: XXIII, 407-425.
- Merkle, F. G. *See* Alderfer, R. B.
- Milam, F. M. *See* Browning, G. M.
- Moore, R. E., and Kong, R. W. New sedimentation tube for analyzing water-stable soil aggregates, 181-187.
- Moshicky, S. *See* Reifenberg, A.
- Myers, H. E., and McCalla, T. M. Changes in soil aggregation in relation to bacterial numbers, hydrogen-ion concentration, and length of time soil was kept moist, 189-200.
- Page, J. B. Unreliability of benzidine color reaction as test for montmorillonite, 133-140; *see* Kelley, W. P., Dore, W. H., and.
- Papadakis, J. S. Rapid soil test—1-gram ball resistance, 219-221; rapid method for determining soil moisture, 279-281.
- Peech, M. Availability of ions in light sandy soils as affected by soil reaction, 473-486.
- Pinck, L. A., Sherman, M. S., and Allison, F. E. Behavior of soluble organic phosphates added to soils, 351-365.
- Reifenberg, A., and Moshicky, S. Palestine peat in relation to other peats, 173-180.
- Richards, L. A. Pressure-membrane extraction apparatus for soil solution, 377-386.
- Robinson, B. *See* MacIntire, W. H., Shaw, W. M., and.
- Shaw, W. M. *See* MacIntire, W. H., and Robinson, B.
- Sherman, M. S. *See* Pinck, L. A., and Allison, F. E.
- Shive, J. W. Balance of ions and oxygen tension in nutrient substrates for plants, 445-459; *see* Gilbert, S. G.; Marsh, R. P.
- Tedrow, J. C. F., and Gillam, W. S. Base-exchange capacity of organic and inorganic fractions of several podzolic soil profiles, 223-233.
- Umbreit, W. W. *See* Vogler, K. G.
- Vogler, K. G., and Umbreit, W. W. Necessity for direct contact in sulfur oxidation by *Thiobacillus thiooxidans*, 331-337.
- Weeks, M. E., and Karraker, P. E. Comparison of various extracting solutions for measuring availability of phosphorus in soils of known fertilizer treatment and crop performance, 41-54.
- Wilson, J. K. *See* Katznelson, H.
- Work, R. A. *See* Allyn, R. B.
- Wrenshall, C. L. *See* Dyer, W. J.
- Wrenshall, C. L., and Dyer, W. J. Organic phosphorus in soils: II, 235-248.

SUBJECT INDEX

Absorption—

- by plants, of—
 - ammonia, 451-455
 - calcium, 66, 143
 - micronutrients, 435
 - nitrate, 451-455
 - nutrients from culture, 431-444
- by montmorillonite and clays, of proteins, 126, 127

Aggregates, methods for determining, 181, 203

Aggregation, as affected by—

- hydrogen-ion concentration, 195, 418
- microorganisms, 189
- moisture relations, 196-197
- sterilization, 198

Aluminum, effect on phosphate determination in soil extracts, 295

Ammonium sorption, as influenced by calcium saturation, 269, 270

Bacteria—

- in gleization, 213
- nitrogen fixation by—
 - Azotobacter*, 85-99
 - protozoa, 85-99
- sulfur oxidation by *Thiobacillus thiooxidans*, 331

Bacteriophage of *Rhizobia*, 59-63

Base-exchange capacity of—

- alkali soil colloids, 104
- Hawaiian soils, 266
- inorganic fractions of podzols, 223
- montmorillonite, 125
- Norfolk soils, 474
- organic fraction of podzols, 228, 230
- organic matter, 492
- podzol soils, 227
- protein-clay complexes, 130

Benzidine—

- factors influencing test for montmorillonite, 137
- unreliability of test, 133-140

Books, *see* end of letter B

Boron—

- as a factor in calcium metabolism, 141
- content of corn, 143

BOOKS

- American Association for the Advancement of Science, 1940 Proceedings, 171
- Baly, E. C. C. Photosynthesis, 427
- Baver, L. D. Soil Physics, 171
- Biochemistry of Symbiotic Nitrogen Fixation, 171
- Bowman, E. *See* Mitchell, L. S.
- Chemistry, Handbook of, and Physics, 171
- Coal as natural resource, *My Country 'Tis of Thee*, 427
- Evans, R. I. *See* Fassett, N. C.
- Fassett, N. C., Evans, R. I., and Mose, C. Leguminous Plants of Wisconsin, 427
- Fruit Production, Modern, 427
- Gourley, J. H., and Howlett, F. S. Modern Fruit Production, 427
- Ground-Water Motion, Theory of, 428
- Gustafson, A. F. Soils and Soil Management, 427
- Hodgman, C. D., and Holmes, H. N. (editors). Handbook of Chemistry and Physics. Twenty-fourth edition, 171
- Holmes, H. N. *See* Hodgman, C. D.
- Howlett, F. S. *See* Gourley, J. H.
- King, M. H. Theory of Ground-Water Motion, 428
- Leguminous Plants of Wisconsin, 427
- Mitchell, L. S., Bowman, E., and Phelps, M. *My Country 'Tis of Thee*, 427
- Mose, C. *See* Fassett, N. C.
- Nitrogen Fixation, Biochemistry of Symbiotic, 171
- Oil as natural resource, *My Country 'Tis of Thee*, 427
- Palestine, Soils of, 171
- Phelps, M. *See* Mitchell, L. S.
- Photosynthesis, 427
- Physics, Handbook of Chemistry and, 171
- Physics, Temperature, 428
- Plants, Leguminous, of Wisconsin, 427
- Reifenberg, A. Soils of Palestine, 171
- Snedecor, G. W. Statistical Methods. Second edition, 172
- Soil as natural resource, *My Country 'Tis of Thee*, 427
- Soil Physics, 171
- Soil physics, Theory of Ground-Water Motion, 428
- Soils and Soil Management, 427
- Soils of Palestine, 171
- Statistical Methods, 172
- Temperature, Its Measurement and Control in Science and Industry, 428
- Wilson, P. W. Biochemistry of Symbiotic Nitrogen Fixation, 171

Calcium—

- absorption by plants, 66, 143
- and gleization, 213-215
- decomposition of calcium carbonate, 116-118

- Calcium—(*continued*)
 exchangeable in—
 arid soils, 466
 India soils, 341
 Norfolk soil, 474
 saturation, effect on sorption of ammonium
 and potassium, 265-272, 478
 transfer to plants, 65-69
 Cobalt determination, in soils, 387-390
 Colloids of alkali soils—
 black, 111-115
 chemical composition, 103
 colorimetric tests, 134
 dehydration curves, 105-107
 solonetz, 118-121
 white, 111-115
 x-ray studies, 107-109, 112-114
 Electrolysis, method of obtaining acidoids,
 411
 Exchange capacity of soils, *see* Base exchange
 Flowmeter, apparatus, 55-58
 Humus, content of soils, 409
 Hydrogen-ion concentration—
 as affected by—
 electrode contact, 27
 moisture content of soil, 30-38
 at low moisture content of soils, 17
 availability of ions, 437
 base saturation, 476
 effects on aggregation, 195
 of—
 calcium carbonate powder, 28
 calcium sulfate powder, 28
 peat, 174, 178
 quartz powder, 23
 silicic acid, 23
 sodium chloride, 29
 soils at field moisture, 19, 29
 various soils, 32, 33, 36, 474
 Ion—
 absorption by—
 plants, 431
 soils, 287
 availability in light sandy soils, 473-486
 balance in culture solutions, 445-459
 Iron—
 effect on—
 benzidine test for montmorillonite, 137
 cobalt determination, 389
 phosphate determination in soil ex-
 tracts, 294
 ferrous, in soils, 249-263
 in soil colloids, 138
 Leaching, effect on soil reaction, 477
 Lysimeter studies, 79-81
 Magnesium, exchangeable in—
 India soils, 341
 Norfolk soil, 474
 Microorganisms—*see also* Bacteria
 as affected by—
 temperature, 13
 ultraviolet light, 13
 effect on—
 nitrogen fixation, 85-99
 soil aggregation, 191, 193
 Moisture—
 available, in soils, 402
 content of soils, 275, 279
 control by availameter, 307-319, 391-406
 effect on—
 aggregation, 196, 197
 hydrogen-ion concentration, 32
 soil stability, 391
 equivalent methods, 273-278, 367-376, 383
 wilting percentage of soils, 393, 401
 Nitrogen—
 content of—
 peat, 178
 soils, 223
 fixation by Azotobacter, 85-99
 losses, as affected by—
 cropping, 4, 5
 erosion, 9
 denitrification, 9
 leaching, 9
 moisture, 11
 temperature, 10
 ultraviolet light, 11
 losses from dry-farm soils, 3
 relation to wheat yields, 342
 Organic acid, content of plants, oxygen
 tension, 455
 Organic matter—
 content of—
 peat, 179
 soils, 3, 7, 207, 228, 266, 463, 466, 474
 effect on phosphate determination in soil
 extracts, 296
 in soil development, 490
 ion availability, 487
 losses, as affected by—
 cropping, 7
 erosion, 9
 temperature, 8
 ultraviolet light, 8

- Oxygen—
 effect on—
 absorption, 451-455
 accumulation of nutrients, 453
 assimilation of nutrients, 451-455
 requirements for plants, 445-458
 tension in culture solutions, 445
- Peat—
 composition, 174, 175
 iron content, 256, 257
 profiles of Palestine, 174
 structural characteristics, 173, 180
- Phosphate—
 determination in soil extracts, 289-298
 organic, retention in soils, 351-365
- Phosphorus—
 available—
 extracting solutions for measuring, 41-44, 155
 in arid soils, 464
 behavior of soluble organic in soils, 351
 content of—
 corn, 43
 vegetable crops, 153
 influence of grinding, 46
 in peat, 178
 methods of determining, 239-241
 nucleic acid and phytin derivatives, 239-241
 organic, studies in soil, 159-170; 235-248; 323-329
 penetration in soil by radioactive tracers, 285
 retention by soils, 156, 160
- Potassium—
 adsorption, 287
 availability methods, 441
 content of soils, 287
 sorption, as influenced by calcium saturation, 267
- Radioactive elements for soil and fertilizer studies, 283-288
- Selenium content of forage crops, 299
- Sesquioxide ratios in colloids, 104, 414
- Silica, effect on phosphate determination in soil extracts, 296
- Soil—
 acidoids, 415
 arid, 461
 aggregation, *see* Aggregation
 ball resistance, 219
 base status, 410, 418
 colloidal behavior laws, 407-425
 copper fixation, 482
 erosion, effect on—
 nitrogen losses, 9
 organic matter losses, 9
 exchange capacity, *see* Base exchange
 Hawaiian, 265
 hydrogen-ion concentration, 195, 418
 liming, effect on sulfates, 76
 mechanical analysis, 190, 203
 moisture, *see* Moisture
 phosphorus, *see* Phosphorus
 profiles—
 chemical analysis, 75, 266, 463, 480
 podzols, 223-233, 409, 417, 424
 series, analyses, descriptions of, or experiments with—
 Aiken, 276, 382, 397; Altamont, 31; Antioch, 118, 382; Austin, 275, 276; Bath, 275; Bates, 275; Bedford, 285; Blanton, 473; Calhoun, 75; Canby, 118; Carrington, 276; Cecil, 284, 355; Chenango, 153; Chester, 285; Coker, 397; Crosby, 285; Cumberland, 75; Dekalb, 275; Dunkirk, 75; Emmet, 225; Eustis, 473; Fallon, 102; Fayette, 275; Fremont, 276; Fresno, 102; Geary, 189; Greenville, 275; Grenada, 43; Groton, 60; Hagerstown, 204, 275; Hanford, 21, 31, 36, 135; Hartsells, 75; Holtville, 102; Honeoye, 275, 276; Hopi, 275; Huerhuero, 118; Houston, 276; Imperial, 102; Isabella, 224; Kalkaska, 225; Keefers, 135; Kirkland, 275; Lansing, 60; Las Vegas, 285, 355; Maury, 43; Maxwell, 135; Medford, 396; Melbourne, 275; Merrimac, 60; Meyer, 60, 383, 396; Miami, 275; Monongahela, 276; Muskingum, 275, 276; Newton, 284; Norfolk, 285, 355, 473; Ogemaw, 224; Orangeburg, 275; Palouse, 275; Parsons, 275; Phoenix, 392, 396; Pinedale, 275; Placentia, 21; Putnam, 65, 213; Ramona, 31; Red Bay, 275; Redding, 135; Rosamond, 102; Rubicon, 224; Ruston, 275; San Joaquin, 135; Selkirk, 224; Sierra, 382; Sites, 396; Sorrento, 36; Sunrise, 102; Susquehanna, 276; Tilsit, 43;

- Soil—
 series—(*continued*)
 Traver, 31; Upshur, 276; Vernon, 275; Volusia, 60; Vina, 135; Vista, 36; Walla Walla, 275; Waukena, 120; Westmoreland, 276; Yolo, 21, 31, 36, 135, 183.
 solution—
 methods of obtaining, 377
 pressure membrane apparatus, 384
 sorption of—
 ammonia, 269
 potassium, 267
 structure, effects of treatments, 201, 422
 sulfate retention, as affected by limestone and dolomite, 73
 temperature, as affected by cropping, 10
 types, 420
Soybeans—
 and oxygen tension in substrate, 449
 as influenced by calcium, 66
Sulfur—
 content of—
 forage crops, 304
 rainwater, 76
 influence of—
 carbon dioxide tension on oxidation, 333
 oxygen tension on oxidation, 333
 particle size on oxidation, 336
 losses, 77
 oxidation by *Thiobacillus thiooxidans*, contact theory, 331
 recoveries, 77
Titanium, effect on phosphate determination in soil extracts, 295
Tomatoes, growth in relation to oxygen tension, 432, 449, 451
Vanadium, effect on phosphate determination in soil extracts, 295
Wheat yields, as affected by—
 available phosphorus, 341
 boron, 341
 exchange calcium, 341
 exchange magnesium, 341
 exchange potassium, 341
 exchange sodium, 341
 manganese, 341
 soluble salts, 341
 total iron, 342
Zinc fixation by soils, 481-483

